WHAT IS CLAIMED IS:

1. A medical capsule comprising:

a) a housing having an interior space with a cargo bay area;

b) a transceiver enclosed within said housing;

c) at least one ultrasonic transducer electrically connected to the transceiver;

d) a power supply enclosed with the housing and electrically connected to the transceiver; and,

e) a microprocessor unit for data processing and control, said microprocessor being electrically connected to the transceiver.

2. The capsule of Claim 1, further comprising within the cargo bay area a payload selected from the group consisting of medical diagnostic devices, devices for treating a medical condition and visualizing apparatus.

3. The capsule of Claim 2, wherein the medical diagnostic devices include at least one microlaboratory device for analyzing body fluids for detecting and/or measuring blood, mineral, toxins and/or microorganisms.

4. The capsule of Claim 3, wherein the microlaboratory device is a microfluidic device.

5. The capsule of Claim 2, wherein the medical diagnostic device includes a microphone or temperature-measuring device.

6. The capsule of Claim 2, wherein the device for treating a medical condition comprises a medically efficacious material and means responsive to a signal for expelling the medically efficacious material from the capsule.

7. The capsule of Claim 6, wherein the medically efficacious material comprises a medicament selected from the group consisting of antibiotic, antiviral compounds, chemotherapeutic agents, nutriments, radioactive isotopes, dyes, tracers, radio-opaque materials, growth factors, hormones and steroids.

8. The capsule of Claim 6, wherein the visualizing apparatus comprises an optical camera and a light source.

9. The capsule of Claim 8, wherein the light source is a LED or a flash lamp.

10. The capsule of Claim 1, including an array of ultrasonic transducers to provide omni-directional coverage operable in the range of from about 5 MHz to about 20 MHz.

11. The capsule of Claim 10, wherein at least six ultrasonic transducers are included in the array.

12. The capsule of Claim 1, wherein the housing is configured and dimensioned so as to be ingestible and/or implantable in a human body.

13. The capsule of Claim 2, further comprising a signal interface between the microprocessor and the payload.

14. A system for wireless communication with a transceiver within a living body, the system comprising:

a) at least one capsule enclosing at least one omni-directional, two-way ultrasonic transducer array connected to a transceiver, a power supply, and a microprocessor; and,

b) means positioned external to the body for transmitting and receiving ultrasonic signals to and from the capsule.

15. The system of Claim 14, wherein the capsule further comprises a payload selected from the group consisting of medical diagnostic devices, devices for treating a medical condition and visualizing apparatus.

16. The system of Claim 14, further comprising at least two capsules having means for ultrasonic communication with each other.

17. The system of Claim 14, wherein the means external to the body further comprises means for transmitting radio frequency electromagnetic signals and the system further comprises a remote monitoring station for receiving said radio frequency electromagnetic signals.

18. The system of Claim 14, wherein the capsule further comprises an ultrasonic pulse emitter for generating a plurality of ultrasonic imaging pulses and the means positioned external to the body further comprises means for generating an image from said ultrasonic imaging pulses.

19. A method for medical monitoring of a living body comprising:

a) positioning a capsule within the body, said capsule including enclosing at least one omni-directional, two-way ultrasonic transducer array connected to a transceiver, a power supply, and a microprocessor;

b) positioning a least one external transceiver in proximity to an exterior surface of the body; and,

c) transmitting at least one ultrasonic signal between the at least one external transceiver and the ultrasonic transducer array in the capsule.

20. The method of Claim 19, further comprising the step of measuring a physiological condition within the body, converting information about said physiological condition into a data stream, and transmitting said data stream via a signal to a position outside the body.

21. The method of Claim 20, wherein the signal is an ultrasonic signal received by the external transceiver.

22. The method of Claim 19, wherein multiple external transceivers are attached to the exterior surface of the body at spaced apart respective positions.

23. The method of Claim 22, wherein the multiple external transceivers provide continuous tracking of the capsule's position within the body.

24. The method of Claim 19, wherein said medical monitoring comprises monitoring of one or more of heart beat rate, breathing rate, body temperature, pH, or presence of blood, toxin, microorganisms, minerals or salts.